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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,031	07/08/2003	James N. Pan	50432-592	6675
7590 07/22/2004				
McDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096		EXAMINER STEVENSON, ANDRE C		
		ART UNIT PAPER NUMBER		
		2812		

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/614,031	Applicant(s) PAN ET AL.	
	Examiner Andre' C. Stevenson	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-18 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 9 is/are rejected.
- 7) ☒ Claim(s) 3-8, 10, 11 is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☒ received.
2. ☐ received in Application No. (Series Code / Serial Number) ____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 20) <input type="checkbox"/> Other: |

Detail Action

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webb (U.S. Pat. No. 5159486), and further in view of Hung et al (U.S. Pat. No. 5608287).

Webb (U.S. Pat. No. 5159486), claim #1, a method of determining a work function of a metal, comprising the steps of: forming a metal-on-silicon (MS) Schottky diode with a metal having a work function to be determined forming contacts of the MS Schottky diode; measuring a capacitance-voltage curve of the MS Schottky diode; and determining the work function of the metal based on the measured capacitance-voltage curve, (Fig. #2, item 52, 54, 56, 58, 60 and 62, Column 11, lines 6 through 38, Column 12 line 39 through 57, Column 13 line 41 through 59).

Webb (U.S. Pat. No. 5159486) discloses the claimed invention except for forming a metal-on-silicon (MS) Schottky. Hung et al (U.S. Pat. No.5608287) teaches that it is known to form a metal-on-silicon (MS) Schottky.

Furthermore, **Claim #1**, a method of determining a work function of a metal, comprising the steps of: forming a metal-on-silicon (MS) Schottky diode with a metal having a work function to be determined forming contacts of the MS Schottky diode; measuring a capacitance-voltage curve of the MS Schottky diode; and determining the work function of the metal based on the measured capacitance-voltage curve, is taught by Hung et al (U.S. Pat. No.5608287), (Column 4, lines 12 through 17, line 35 through 47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made wherein the ultraviolet optical radiation source comprises an ultraviolet laser as taught by Hung et al (U.S. Pat. No.5608287), since Hung et al (U.S. Pat. No.5608287) states at Column 4, lines 35 through 47 that such a modification would silicides produce low Schottky barrier heights.

Considering now, **Claim #2**, a method of claim 1, wherein the step of forming the MS Schottky diode includes depositing the metal on a silicon substrate in accordance

with a mask on the silicon substrate, is taught by Webb (U.S. Pat. No. 5159486) (Column 11, lines 33 through 38).

With respect to **Claim #9**, a method of claim 2, wherein a plurality of the contacts are actual capacitor contacts and another one of the contacts is a front contact, is taught by Webb (U.S. Pat. No. 5159486) (Fig. #2, item 52, 54, 56, 58, 60 and 62, Column 11, lines 6 through 38, Column 12 line 39 through 57, Column 13 line 41 through 59).

Objected Claims

Claims 3 through 8, 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim #3

- ✓ Mask is a shadow mask

Claim #4

- ✓ First one of the contacts is at least ten times smaller in size than a second one of the contacts.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter: While the prior art teaches finding the work function of metal on silicon capacitors it fails to teach a first cross sectional area and a second hole with a second cross sectional area that is at least 100 times greater than the first cross sectional area.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 12 through 18 are allowed.

Claim# 12

- A first cross sectional area and a second hole with a second cross sectional area that is at least 100 times greater than the first cross sectional area.

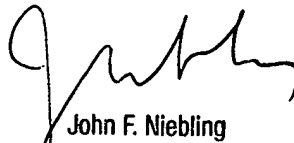
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre' Stevenson whose telephone number is (571) 272 1683. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:30 pm.

Art Unit: 2812

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (571) 272 1679. The fax phone number for the organization where this application or proceeding is assigned is (703) 308 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956. Also, the proceeding numbers can be used to fax information through the Right Fax system;

(703) 872-9306


John F. Niebling
Supervisory Patent Examiner
Technology Center 2800

Andre' Stevenson

Art Unit 2812

07/20/04